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#### ANNOTATED CHECKLIST OF LAND MAMMALS OF EL SALVADOR

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El Salvador, a country of approximately 21,000 square kilometers, is located in Central America between 13°09' and 14°27' N latitude and 87°41' and 90°08' W longitude. To the north and east it borders on Honduras, to the west on Guatemala, and to the south on the Pacific Ocean. El Salvador has more than 200 inhabitants per square kilometer, a population density more than 12 times the average of Latin American countries (Escamilla, 1986). It is the smallest of the Central American republics, and one of only two countries in the region (the other is Belize) that do not have a coast along both the Atlantic and Pacific oceans. Although small in area, the country has a varied climate and topography, and thus a diverse tropical biota.

Temperature changes relatively little during the year, with annual and daily variations rarely exceeding 10° C (Escamilla, 1986). In San Salvador, at 710 meters, the mean annual temperature is 22.8° C. The coldest month, December, has a mean of 21.8° C and the hottest month, April, has a mean of 24.5° C. Although the temperature at a given locality is relatively constant, temperature does vary considerably with altitude. For example, at Santa Cruz Porrillo (elevation 30 meters) the average annual temperature is 26.7° C. In contrast, at Montecristo (2230 meters) the mean annual temperature is only 12.8° C (Holdridge, 1975).

Climatic differences in El Salvador are due mainly to the quantity and distribution of annual precipitation. Rainfall is abundant from May through October but rare from November through April (Escamilla,

1986). The mean annual rainfall at San Salvador is 1789 mm., ranging from 355 mm in July to only 4 mm in February (Holdridge, 1975).

Elevations vary from sea level along the Pacific coast to 2730 meters in the mountains along the Honduran border. Habitat zonation ranges from dry tropical forest to wet montane forest. The country has been subdivided into 19 life zones, based on climate, according to the system devised by Holdridge (Tosi and Hartshorn, 1978).

According to Burt and Stirton (1961), the first mammalian specimen taken from El Salvador was a squirrel, probably obtained in Departamento de La Unión, to which Ogilby (1839) gave the name *Sciurus variegatoides*. Bats obtained near Volcán Izalco, Departamento de Sonsonate, and donated to the Academy of Natural Sciences of Philadelphia in 1860 also represent an early collection from the country. In 1866, H. Allen described *Vespertilio concinnus* (= *Myotis nigricans*) from "Salvador," presumably based on the material from Volcán Izalco (Burt and Stirton, 1961).

Systematic mammal collecting in El Salvador began in 1925 under the financial patronage of Donald R. Dickey. Collecting was done by the late Rubin A. Stirton from July 1925 to April 1926, and from late November 1926 through June 1927. Stirton returned to El Salvador from November 1941 to May 1942 as head of an expedition from the University of California. Milton Hildebrand served as mammalogist on that expedition (Burt and Stirton, 1961).

Dickey (1928a, 1928b, 1928c) described 11 new species and subspecies from Stirton's collections. Four other subspecies later were described from this material by Nelson and Goldman (1931), Nelson (1932), Goldman (1937), and Hooper (1949).

The only other general mammal collecting in El Salvador was by Heinz Felten from October 1952 to April 1954. Felten (1955, 1956a, 1956b, 1956c, 1957a, 1957b, 1958a, 1958b, 1958c) published nine papers on the mammals of the country in which he recorded 73 species and described two new subspecies.

The series of papers by Felten and the treatise on Salvadorian land mammals by Burt and Stirton (1961) are the only synoptic treatments of the mammalian fauna of the country. A total of 97 species was reported in these publications. Records published since then, together with several overlooked by Burt and Stirton, have increased the number of known species to 121 as here listed, almost half of which are bats. Probably at least an additional dozen taxa, possibly more, occur in El Salvador. For example, the genera *Caluromys*, *Didelidurus*, *Galic-tis*, and *Mazama* are unrepresented in our list; furthermore, only one species of *Micronycteris*, only four genera of glossophagines, and only

two kinds of xenarthrans have been reported from the country. In addition to new distributional records, systematic studies have resulted in changes in nomenclatorial status of several taxa in recent years. Some of the new distributional records and changes in nomenclature have been incorporated into second-hand summaries such as those of Hall (1981) and Jones *et al.* (1988).

Historic accounts of biological conditions in El Salvador (Daugherty, 1972, and Guzmán, 1883, for example), some of which address the drastic affect in recent centuries of humans on the environment, suggest the possible past occurrence of a few species of mammals not listed here. We have not included these taxa (howler monkeys, white-lipped peccaries, and brockets are examples) because the published records are of a general nature or speculative, and, in any event, are not substantiated by actual specimens or first-hand observations. Nonetheless, chronicles of conditions in colonial and early republican times are of considerable value in gauging the overall impact of land degradation and human population pressure on biodiversity in the country.

Following is a checklist of mammalian species known to occur in El Salvador or that occurred there until relatively recently. Taxa are arranged phylogenetically through genera, but species in each genus are listed alphabetically. Citations are given to publications that are primary (or principal) sources of distributional data on species and subspecies of Salvadorian mammals. In a few instances, notation is made of specimens reported in the literature under a name different than the one used here, or comments are entered concerning the taxonomic status of a taxon. We hope this checklist will prove a useful reference for both laboratory and field workers concerned with studies of mammalian biology in El Salvador. We are grateful to K. F. Koopman, T. J. McCarthy, and D. E. Wilson for comments on a draft version of the manuscript.

## Order MARSUPIALIA

### Family Didelphidae

***Didelphis marsupialis caaucae*** J. A. Allen, 1900. Felten (1958c: 217, as *D. m. californica* in part), Burt and Stirton (1961:18, as *D. m. tabascensis* in part), Gardner (1973:70).

***Didelphis virginiana californica*** Bennett, 1833. Felten (1958c:217, as *D. marsupialis californica* in part), Burt and Stirton (1961:18, as *D. marsupialis tabascensis* in part), Gardner (1973:74).

***Philander opossum pallidus*** (J. A. Allen, 1901). Felten (1958c: 215, as *P. o. fuscogriseus*), Burt and Stirton (1961:20).

- Chironectes minimus argyrodites*** Dickey, 1928. Dickey (1928c:15, as *C. argyrodites*), Burt and Stirton (1961:20, as *C. argyrodites*).  
***Marmosa mexicana mexicana*** Merriam, 1897. Felten (1958c: 215), Burt and Stirton (1961:19).

Order INSECTIVORA

Family Soricidae

- Cryptotis goodwini*** Jackson, 1933. Felten (1958c:218).  
***Cryptotis nigrescens merriami*** Choate, 1970. Burt and Stirton (1961:21), Choate (1970:279).  
***Cryptotis parva orophila*** (J. A. Allen, 1895). Choate (1970:264).

Order CHIROPTERA

Family Emballonuridae

- Rhynchonycteris naso*** (Wied, 1820). Sanborn (1937:327, as *Rhynchiscus naso*), Felten (1955:276, as *Rhynchiscus naso*), Burt and Stirton (1961:22, as *Rhynchiscus naso*).  
***Saccopteryx bilineata*** (Temminck, 1838). Felten (1955:276), Burt and Stirton (1961:22). Regarded by some authorities as monotypic, but others recognize the subspecies *S. b. centralis* Thomas, 1904, as occurring in Central America.  
***Saccopteryx leptura*** (Schreber, 1774). Burt and Stirton (1961:23).  
***Pteropteryx macrotis macrotis*** (Wagner, 1843). Felten (1955: 284), Burt and Stirton (1961:23).  
***Balantiopteryx plicata plicata*** Peters, 1867. Felten (1955:280), Burt and Stirton (1961:24).

Family Noctilionidae

- Noctilio leporinus mastivus*** (Vahl, 1797). Hellebuyck *et al.* (1985: 784).

Family Mormoopidae

- Pteronotus davyi fulvus*** (Thomas, 1892). Felten (1956a:78), Burt and Stirton (1961:27), Smith (1972:102), Hellebuyck *et al.* (1985: 785).  
***Pteronotus gymnonotus*** (Wagner, 1843). Felten 1956a:75, as *P. suapurensis*), Burt and Stirton (1961:26, as *P. suapurensis*), Smith (1972:106, as *P. suapurensis*).  
***Pteronotus parnellii mesoamericanus*** Smith, 1972. Felten (1956a: 69, as *Chilonycteris rubiginosa fusca*), Burt and Stirton (1961:25, as

- P. rubiginosus fuscus*), Smith (1972:74), Webb and Perrigo (1984:249), Hellebuyck *et al.* (1985:786).
- Pteronotus personatus psilotis*** (Dobson, 1878). Felten (1956a:73, as *Chilonycteris personata*), Burt and Stirton (1961:26, as *P. psilotis*), Smith (1972:93).
- Mormoops megalophylla megalophylla*** Peters, 1864. Felten (1956a:80), Burt and Stirton (1961:27, as *M. m. senicula*), Davis and Carter (1962:67), Smith (1972:118).

#### Family Phyllostomidae

- Micronycteris megalotis mexicana*** Miller, 1898. Felten (1956b:180), Burt and Stirton (1961:28).
- Lonchorhina aurita aurita*** Tomes, 1863. Felten (1956b:181).
- Macrophyllum macrophyllum*** (Schinz, 1821). Felten (1956b:183), Burt and Stirton (1961:28), Harrison and Pendleton (1975:869).
- Phyllostomus discolor verrucosus*** Elliot, 1905. Felten 1956b:186), Burt and Stirton (1961:29).
- Trachops cirrhosus coffini*** Goldman, 1925. Felten (1956b:189), Burt and Stirton (1961:30).
- Chrotopterus auritus auritus*** (Peters, 1856). Burt and Stirton (1961:30).
- Glossophaga commissarisi commissarisi*** Gardner, 1962. Hellebuyck *et al.* (1985:784-786).
- Glossophaga leachii*** (Gray, 1844). Hall (1981:121, as *G. alticola*).
- Glossophaga soricina handleyi*** Webster and Jones, 1980. Felten (1956b:192, as *G. s. leachii*), Burt and Stirton (1961:31, as *G. s. leachii*), Hellebuyck *et al.* (1985:784-786).
- Anoura geoffroyi lasiopyga*** (Peters, 1868). Sanborn (1933:27), Felten (1956b:196), Hellebuyck *et al.* (1985:784-786).
- Choeroniscus godmani*** (Thomas, 1903). Burt and Stirton (1961:32), Owen *et al.* (1990:418).
- Leptonycteris curasoae yerbabuenae*** Martínez and Villa, 1940. Jones and Bleier (1974:144), Arita and Humphrey (1988:55). We follow the latter authors in use of the name combination here employed.
- Carollia perspicillata azteca*** Saussure, 1860. Felten (1956b:199), Burt and Stirton (1961:33), Pine (1972:70-71), Hellebuyck *et al.* (1985:784-786).
- Carollia subrufa*** (Hahn, 1905). Felten (1956b:211, as *C. castanea subrufa*), Burt and Stirton (1961:33, as *C. castanea subrufa*), Pine (1972:28), Hellebuyck *et al.* (1985:785).

- Sturnira lilium parvidens* Goldman, 1917. Felten (1956c:341), Hellebuyck *et al.* (1985:784-785).
- Sturnira ludovici ludovici* Anthony, 1924. Hellebuyck *et al.* (1985:784-786).
- Uroderma bilobatum davis* Baker and McDaniel, 1972. Felten (1956c:343, as *U. b. bilobatum*), Burt and Stirton (1961:34, as *U. b. bilobatum*), Davis (1968:695, as *U. b. bilobatum*), Baker and McDaniel (1972:4), Baker *et al.* (1972:428), Baker *et al.* (1975:141), Baker (1979:126), Baker *et al.* (1979:222), Baker (1981:297), Greenbaum (1981), Owen (1987:56).
- Uroderma magnirostrum* Davis, 1968. Davis (1968:680), Swanepoel and Genoways (1979:102).
- Vampyrops helleri* Peters, 1866. LaVal (1969:820), Hellebuyck *et al.* (1985:785-786).
- Chiroderma salvini salvini* Dobson, 1878. Hellebuyck *et al.* (1985:785).
- Chiroderma villosum jesupi* J. A. Allen, 1900. Hellebuyck *et al.* (1985:785), Owen (1987:55).
- Artibeus aztecus major* Davis, 1969. Hellebuyck *et al.* (1985:784-786). Owen (1987) removed this and other small species (including *phaeotis* and *toltecus*) from the genus *Artibeus* and placed them in the genus *Dermanura*.
- Artibeus inopinatus* Davis and Carter, 1964. Burt and Stirton (1961:35, as *A. hirsutus*), Davis and Carter (1964:121).
- Artibeus intermedius* J. A. Allen, 1897. Davis (1984:10), Owen (1987:54).
- Artibeus jamaicensis paulus* Davis, 1970. Felten (1956c:346, as *A. j. jamaicensis*), Burt and Stirton (1961:35, as *A. j. jamaicensis*), Davis (1970b:121), Hellebuyck *et al.* (1985:784-786).
- Artibeus lituratus palmarum* J. A. Allen and Chapman, 1897. Felten (1956c:350), Burt and Stirton (1961:34), Davis (1984:13), Hellebuyck *et al.* (1985:784-785).
- Artibeus phaeotis palatinus* Davis, 1970. Davis (1970a:401), Hellebuyck *et al.* (1985:784-786).
- Artibeus toltecus hesperus* Davis, 1969. Felten (1956c:351, as *A. cinereus toltecus*), Burt and Stirton (1961:35, as *A. cinereus*), Davis (1969:26), Swanepoel and Genoways (1979:98), Hellebuyck *et al.* (1985:784-786).
- Enchisthenes hartii* (Thomas, 1892). Hellebuyck *et al.* (1985:785). Owen (1987) reluctantly placed *hartii* in the genus *Dermanura*. Jones *et al.* (1988), however, opined that *Enchisthenes* probably merits generic status.



***Centurio senex senex*** Gray, 1842. Felten (1956c:352), Burt and Stirton (1961:36), Davis *et al.* (1964:386), Paradiso (1967:601), Hellebuyck *et al.* (1985:784, 786), Owen (1987:55).

***Desmodus rotundus murinus*** Wagner, 1840. Felten (1956c:354), Burt and Stirton (1961:36), Hellebuyck *et al.* (1985: 785).

***Diaemus youngi*** Jentink, 1893. Greenbaum and Jones (1978:5), McBee *et al.* (1985:404), Owen *et al.* (1990:418).

***Diphylla ecaudata*** Spix, 1823. Felten (1956c:364, as *D. e. centralis*), Burt and Stirton (1961:37). Currently regarded as a monotypic species (Jones *et al.*, 1988).

#### Family Natalidae

***Natalus stramineus saturatus*** Dalquest and Hall, 1949. Felten (1957a:1, as *N. mexicanus*), Goodwin (1959:8), Burt and Stirton (1961:38, as *N. mexicanus*).

#### Family Vespertilionidae

***Myotis keaysi pilosatibialis*** LaVal, 1973. Hellebuyck *et al.* (1985: 786).

***Myotis nigricans nigricans*** (Schinz, 1821). H. Allen (1866:280), Felten (1957a:5), Miller and G. M. Allen (1928:181, 187), Burt and Stirton (1961:39), LaVal (1973a:10), Koopman (1976:5).

***Myotis velifer velifer*** (J. A. Allen, 1890). Hellebuyck *et al.* (1985: 786).

***Eptesicus fuscus miradorensis*** (H. Allen, 1866). Burt and Stirton (1961:39), Hellebuyck *et al.* (1985:785).

***Lasiurus blossevillii frantzii*** (Peters, 1871). Burt and Stirton (1961:39, as *L. borealis*). We follow Baker *et al.* (1988) in use of the specific name *blossevillii*.

***Lasiurus intermedius intermedius*** H. Allen, 1862. Hellebuyck *et al.* (1985:786).

***Rhogeessa tumida*** H. Allen, 1866. Felten (1957a:6, as *R. parvula tumida*), Burt and Stirton (1961:40, as *R. parvula tumida*), LaVal (1973b:44), Bickham and Baker (1977:453), Baker (1984:179), Baker *et al.* (1985:235).

#### Family Molossidae

***Nyctinomops laticaudatus yucatanicus*** (Miller, 1902). Felten (1957a:8, as *Tadarida yucatanica*).

***Eumops auripendulus auripendulus*** (Shaw, 1800). Burt and Stirton (1961:40, as *E. abrasus*), Eger (1977:28).

***Eumops underwoodi underwoodi*** Goodwin, 1940. Hellebuyck *et al.* (1985:787).

***Molossus coibensis*** J. A. Allen, 1904. Felten (1957a:14, as *M. tropidorhynchus coibensis*), Burt and Stirton (1961:41), Dolan (1989:59).

***Molossus molossus*** (Pallas, 1766). Felten (1957a:13, as *M. major aztecus*), Burt and Stirton (1961:41, as *M. major*), Warner *et al.* (1974:175, as *M. pygmaeus*), Dolan (1989:65).

***Molossus rufus*** É. Geoffroy St.-Hilaire, 1805. Felten (1957a:9), Burt and Stirton (1961:41), Dolan (1989:46). Dolan (1989) regarded this large mastiff bat as monotypic, but indicated that further studies may show that recognition of subspecies is justified. In that case, the name *nigricans* would apply to Central American populations of the species.

#### Order PRIMATES

##### Family Cebidae

***Ateles geoffroyi vellerosus*** Gray, 1866. Kellogg and Goldman (1944:35), Felten (1958c:219), Burt and Stirton (1961:21).

#### Order XENARTHRA

##### Family Myrmecophagidae

***Tamandua mexicana mexicana*** (Saussure, 1860). Burt and Stirton (1961:42, as *T. tetradactyla mexicana*).

##### Family Dasypodidae

***Dasypus novemcinctus fenestratus*** Peters, 1864. Felten (1958c:220), Burt and Stirton (1961:42).

#### Order LAGOMORPHA

##### Family Leporidae

***Sylvilagus floridanus hondurensis*** Goldman, 1932. Felten (1958c:220), Burt and Stirton (1961:65).

#### Order RODENTIA

##### Family Sciuridae

***Sciurus deppei deppei*** Peters, 1863. Felten (1957b:149), Burt and Stirton (1961:52).

***Sciurus variegatoides bangsi*** Dickey, 1928. Dickey (1928b:9), Harris (1937:11), Felten (1957b:150), Burt and Stirton (1961:52).



*Sciurus variegatoides variegatoides* Ogilby, 1839. Ogilby (1839: 117), Lesson (1842:112), J. A. Allen (1877:747), Nelson (1899:81), Dickey (1928b:8), Harris (1937:8), Felten (1957b:150), Burt and Stirton (1961:50).

#### Family Geomyidae

*Orthogeomys grandis engelhardi* Felten, 1957. Felten (1957b: 151), Burt and Stirton (1961:52).

*Orthogeomys grandis pygacanthus* Dickey, 1928. Dickey (1928b:9, as *O. pygacanthus*), Burt and Stirton (1961:52).

#### Family Heteromyidae

*Liomys salvini salvini* (Thomas, 1893). Felten (1957b:153, as *L. heterothrix*), Burt and Stirton (1961:54), Genoways (1973: 241).

*Heteromys desmarestianus desmarestianus* Gray, 1868. Dickey (1928b:10, as *H. d. psakastus*), Felten (1957b:152), Burt and Stirton (1961:53), Rogers and Schmidly (1982:385).

#### Family Muridae

*Oryzomys alfaroi saturator* Merriam, 1891. Felten (1958a:5), Burt and Stirton (1961:61, as *O. palustris couesi*).

*Oryzomys couesi couesi* (Alston, 1877). Felten (1958a:1), Burt and Stirton (1961:61).

*Oryzomys fulvescens fulvescens* (Saussure, 1860). Felten (1958a:6), Burt and Stirton (1961:62).

*Oryzomys melanotis salvadorensis* Felten, 1958. Felten (1958a:3, as *O. rostratus salvadorensis*), Burt and Stirton (1961:61).

*Tylomys nudicaudus nudicaudus* (Peters, 1866). Burt and Stirton (1961:59).

*Otodylomys phyllotis phyllotis* Merriam, 1901. Felten (1958a:7, as *O. p. guatemalae*), Hooper (1960:pl. 9), Burt and Stirton (1961:59), Lawlor (1969:40), Carleton (1980:25).

*Nyctomys sumichrasti florencei* Goldman, 1937. Goldman (1937: 422), Felten (1958a:7), Burt and Stirton (1961:59), Csuti (1980:43).

*Reithrodontomys fulvescens chiapensis* A. H. Howell, 1914. Hooper (1952:122), Burt and Stirton (1961:56).

*Reithrodontomys gracilis anthonyi* Goodwin, 1932. Hooper (1952:135), Anderson and Jones (1960:524), Burt and Stirton (1961:56).

- Reithrodontomys gracilis pacificus*** Goodwin, 1932. Felten (1958a:9, as *R. g. anthonyi*), Anderson and Jones (1960:525).
- Reithrodontomys mexicanus ocotepequensis*** Goodwin, 1937. Hooper (1952:150), Burt and Stirton (1961:56).
- Reithrodontomys mexicanus orinus*** Hooper, 1949. Hooper (1949:169-170, 1952:149), Felten (1958a:10), Burt and Stirton (1961:55), Csuti (1980:44).
- Reithrodontomys sumichrasti modestus*** Thomas, 1907. Hooper (1952:81), Felten (1958a:8), Burt and Stirton (1961:55).
- Peromyscus aztecus cordillerae*** Dickey, 1928. Dickey (1928a:2, as *P. boylii cordillerae*), Ondrias (1960:218, as *P. boylii*), Burt and Stirton (1961:56, as *P. boylei cordillera*), Carleton (1979:294).
- Peromyscus aztecus oaxacensis*** Merriam, 1898. Hooper (1957:12), Felten (1958b:133, as *P. oaxacensis*), Burt and Stirton (1961:57, as *P. oaxacensis*), Carleton (1979:295).
- Peromyscus boylii sacarensis*** Dickey, 1928. Dickey (1928a:3), Burt and Stirton (1961:56), Carleton (1979:281).
- Peromyscus gymnotis*** Thomas, 1894. Owen *et al.* (1990:417).
- Peromyscus mexicanus saxatilis*** Merriam, 1898. Dickey (1928a:3, as *P. m. philombrius*, and 1928a:4, as *P. m. salvadorensis*), Hooper (1957:12), Felten (1958b:134), Ondrias (1960:218), Burt and Stirton (1961:57), Huckaby (1980:16), Owen *et al.* (1990:417).
- Peromyscus stirtoni*** Dickey, 1928. Dickey (1928a:5), Burt and Stirton (1961:58), Huckaby (1980:9).
- Habromys lophurus*** (Osgood, 1904). Hooper (1958:pl. 13, as *Peromyscus lophurus*), Musser (1969:20, as *Peromyscus lophurus*), Robertson and Musser (1976:8, as *Peromyscus lophurus*). We follow Carleton (1980, 1989) in recognition of *Habromys* at the generic level.
- Baiomys musculus nigrescens*** Osgood, 1904. Felten (1958b:136, as *B. m. grisescens*), Packard (1960:625), Burt and Stirton (1961:58).
- Scotinomys teguina rufoniger*** Sanborn, 1935. Felten (1958b:137), Hooper (1960:pl. 11), Burt and Stirton (1961:58), Hooper (1972:19).
- Sigmodon hispidus griseus*** J. A. Allen, 1908. Felten (1958b:138), Burt and Stirton (1961:62).
- Rheomys thomasi stirtoni*** Dickey, 1928. Dickey (1928b:12), Stirton (1944:342), Burt and Stirton (1961:60).
- Rheomys thomasi thomasi*** Dickey, 1928. Dickey (1928b:11), Stirton (1944:341-342), Burt and Stirton (1961:60), Hooper (1968:552).

***Rattus rattus*** (Linnaeus, 1758). Felten (1958b:139, as *R. r. rattus*), Burt and Stirton (1961:63).

***Mus musculus*** Linnaeus, 1758. Felten (1958b:140, as *M. m. domesticus*), Burt and Stirton (1961:63).

#### Family Erethizontidae

***Coendou mexicanus mexicanus*** (Kerr, 1792). Felten (1957b:147), Burt and Stirton (1961:64).

#### Family Dasyproctidae

***Agouti paca nelsoni*** Goldman, 1913. Felten (1957b:148, as *Cuniculus paca nelsoni*), Burt and Stirton (1961:64).

***Dasyprocta punctata punctata*** Gray, 1842. Felten (1957b:149), Burt and Stirton (1961:65).

### Order CARNIVORA

#### Family Canidae

***Canis latrans dickeyi*** Nelson, 1932. Nelson (1932:224), Burt and Stirton (1961:48), Csuti (1980:57).

***Urocyon cinereoargenteus guatemalae*** Miller, 1899. Felten (1958c:221, as *U. c. fraterculus*), Burt and Stirton (1961:48).

#### Family Procyonidae

***Bassariscus sumichrasti variabilis*** (Peters, 1874). Felten (1958c:222), Burt and Stirton (1961:45, as *Jentinkia sumichrasti variabilis*).

***Procyon lotor crassidens*** Hollister, 1914. Felten (1958c:222), Goldman (1950:70), Burt and Stirton (1961:43).

***Procyon lotor dickeyi*** Nelson and Goldman, 1931. Nelson and Goldman (1931:20), Goldman (1950:69), Burt and Stirton (1961:43), Csuti (1980:59).

***Nasua nasua narica*** (Linnaeus, 1766). Felten (1958c:222, as *N. narica narica*), Burt and Stirton (1961:44, as *N. narica narica*).

***Potos flavus chiriquensis*** J. A. Allen, 1904. Felten (1958c:223, as *P. f. campechensis*), Burt and Stirton (1961:44), Kortlucke (1973:34).

#### Family Mustelidae

***Mustela frenata goldmani*** (Merriam, 1896). Hall (1951:360), Felten (1958c:224), Burt and Stirton (1961:46).

***Eira barbara inserta*** (J. A. Allen, 1908). Burt and Stirton (1961:46).

*Spilogale putorius elata* Howell, 1906. Van Gelder (1959:325), Burt and Stirton (1961:46).

*Spilogale putorius tropicalis* Howell, 1902. Van Gelder (1959: 319), Burt and Stirton (1961:46).

*Mephitis macroura macroura* Lichtenstein, 1832. Felten (1958c:225), Burt and Stirton (1961:47).

*Conepatus mesoleucus nicaraguae* J. A. Allen, 1910. Burt and Stirton (1961:47, as *C. leuconotus nicaraguae*).

*Lutra longicaudis annectens* Major, 1897. Burt and Stirton (1961:48, as *L. annectens*).

#### Family Felidae

*Felis concolor mayensis* Nelson and Goldman, 1929. Burt and Stirton (1961:49).

*Felis onca centralis* Mearns, 1901. Nelson and Goldman (1933: 235).

*Felis pardalis pardalis* Linnaeus, 1758. Burt and Stirton (1961: 49).

*Felis wiedii salvinia* (Pocock, 1941). Felten (1958c:226), Burt and Stirton (1961:49).

*Felis yagouaroundi fossata* Mearns, 1901. Burt and Stirton (1961: 50).

#### Order PERISSODACTYLA

##### Family Tapiridae

*Tapiris bairdii* (Gill, 1865). Hershkovitz (1954:496).

#### Order ARTIODACTYLA

##### Family Tayassuidae

*Dicotyles tajacu nigrescens* (Goldman, 1926). Felten (1958c:226, as *Pecari tajacu nigrescens*), Burt and Stirton (1961:66, as *Tayassu tajacu nigrescens*). We follow Woodburne (1968) and more recently Wright (1989) in employing the generic name *Dicotyles*.

##### Family Cervidae

*Odocoileus virginianus nelsoni* Merriam, 1898. Felten (1958c:227), Hershkovitz (1958:543), Burt and Stirton (1961:66), Mendéz (1984:521).

## LITERATURE CITED

- ALLEN, H. 1866. Notes on the Vespertilionidae of tropical America. Proc. Acad. Nat. Sci. Philadelphia, 18:279-288.
- ALLEN, J. A. 1877. Sciuridae. Pp. 631-939, in Monographs of North American Rodentia (E. Coues and J. A. Allen), Bull. U. S. Geol. Surv. Territories, 11:xii+x+1-1091, 7 pls.
- ANDERSON, S., AND J. K. JONES, JR. 1960. Records of harvest mice, *Reithrodontomys*, from Central America, with description of a new subspecies from Nicaragua. Univ. Kansas Publ., Mus. Nat. Hist., 9:519-529.
- ARITA, H. T., AND S. R. HUMPHREY. 1988. Revisión taxonómica de los murciélagos magueyeros del género *Leptonycteris* (Chiroptera: Phyllostomidae). Acta Zool. Mexicana, n. s., 29:1-60.
- BAKER, R. J. 1979. Karyology. Pp. 107-155, in Biology of bats of the New World family Phyllostomatidae. Part III (R. J. Baker, J. K. Jones, Jr., and D. C. Carter, eds.), Spec. Publ. Mus., Texas Tech Univ., 16:1-441.
- . 1981. Chromosome flow between chromosomally characterized taxa of a volant mammal, *Uroderma bilobatum* (Chiroptera: Phyllostomatidae). Evolution, 35:296-305.
- . 1984. A sympatric cryptic species of mammal: a new species of *Rhogeessa* (Chiroptera: Vespertilionidae). Syst. Zool., 33:178-183.
- BAKER, R. J., AND V. R. MCDANIEL. 1972. A new subspecies of *Uroderma bilobatum* (Chiroptera: Phyllostomatidae) from Middle America. Occas. Papers Mus., Texas Tech Univ., 7:1-4.
- BAKER, R. J., W. R. ATCHLEY, AND V. R. MCDANIEL. 1972. Karyology and morphometrics of Peters' tent-making bat, *Uroderma bilobatum* Peters (Chiroptera: Phyllostomatidae). Syst. Zool., 21:414-429.
- BAKER, R. J., R. A. BASS, AND M. A. JOHNSON. 1979. Evolutionary implications of chromosomal homology in four genera of stenodermine bats (Phyllostomatidae: Chiroptera). Evolution, 33:220-226.
- BAKER, R. J., J. W. BICKHAM, AND M. L. ARNOLD. 1985. Chromosomal evolution in *Rhogeessa* (Chiroptera: Vespertilionidae): possible speciation by centric fusions. Evolution, 39:233-243.
- BAKER, R. J., W. J. BLEIER, AND W. R. ATCHLEY. 1975. A contact zone between karyotypically characterized taxa of *Uroderma bilobatum* (Mammalia: Chiroptera). Syst. Zool., 24:133-142.
- BAKER, R. J., J. C. PATTON, H. H. GENOWAYS, AND J. C. BICKHAM. 1988. Genic studies of *Lasiurus* (Chiroptera: Vespertilionidae). Occas. Papers Mus., Texas Tech Univ., 117:1-15.
- BICKHAM, J. W., AND R. J. BAKER. 1977. Implications of chromosomal variation in *Rhogeessa* (Chiroptera: Vespertilionidae). J. Mamm., 58:448-453.
- BURT, W. H., AND R. A. STIRTON. 1961. The mammals of El Salvador. Misc. Publ. Mus. Zool., Univ. Michigan, 117:1-69.
- CARLETON, M. D. 1979. Taxonomic status and relationships of *Peromyscus boylii* from El Salvador. J. Mamm., 60:280-296.
- . 1980. Phylogenetic relationships in neotomine-peromyscine rodents (Muroidea) and a reappraisal of the dichotomy within New World Cricetinae. Misc. Publ. Mus. Zool., Univ. Michigan, 157:vii + 1-146.

- . 1989. Systematics and evolution. Pp. 7-141, in *Advances in the study of Peromyscus* (Rodentia) (G. L. Kirkland, Jr., and J. N. Layne, eds.), Texas Tech Univ. Press, Lubbock, iv+367 pp.
- CHOATE, J. R. 1970. Systematics and zoogeography of Middle American shrews of the genus *Cryptotis*. Univ. Kansas Publ., Mus. Nat. Hist., 19:195-317.
- CSUTI, B. 1980. Type specimens of Recent mammals in the Museum of Vertebrate Zoology, University of California, Berkeley. Univ. California Publ. Zool., 114:vii + 1-75.
- DAUGHERTY, H. E. 1972. The impact of man on the zoogeography of El Salvador. Biol. Conserv., 4:273-278.
- DAVIS, W. B. 1968. Review of the genus *Uroderma* (Chiroptera). J. Mamm., 49:676-698.
- . 1969. A review of the small fruit bats (genus *Artibeus*) of Middle America. Southwestern Nat., 14:15-29.
- . 1970a. A review of the small fruit bats (genus *Artibeus*) of Middle America. Part II. Southwestern Nat., 14:389-402.
- . 1970b. The large fruit bats (genus *Artibeus*) of Middle America, with a review of the *Artibeus jamaicensis* complex. J. Mamm., 51:105-122.
- . 1984. Review of the large fruit-eating bats of the *Artibeus "lituratus"* complex (Chiroptera: Phyllostomidae) in Middle America. Occas. Papers Mus., Texas Tech Univ., 93:1-16.
- DAVIS, W. B., AND D. C. CARTER. 1962. Notes on Central American bats with description of a new subspecies of Mormoops. Southwestern Nat., 7:64-74.
- . 1964. A new species of fruit-eating bat (genus *Artibeus*) from Central America. Proc. Biol. Soc. Washington, 77:119-121.
- DAVIS, W. B., D. C. CARTER, AND R. H. PINE. 1964. Noteworthy records of Mexican and Central American bats. J. Mamm., 45:375-387.
- DICKEY, D. R. 1928a. Five new mammals of the genus *Peromyscus* from El Salvador. Proc. Biol. Soc. Washington, 41:1-6.
- . 1928b. Five new mammals of the rodent genera *Sciurus*, *Orthogeomys*, *Heteromys*, and *Rheomys*, from El Salvador. Proc. Biol. Soc. Washington, 41:7-14.
- . 1928c. A new marsupial from El Salvador. Proc. Biol. Soc. Washington, 41:15-16.
- DOLAN, P. G. 1989. Systematics of Middle American mastiff bats of the genus *Molossus*. Spec. Publ. Mus., Texas Tech Univ., 29:1-71.
- EGER, J. L. 1977. Systematics of the genus *Eumops* (Chiroptera: Molossidae). Life Sci. Contrib., Royal Ontario Mus., 110:1-69.
- ESCAMILLA, M. L. 1986. La geografía de El Salvador. Pp. 7-19, in *Geografía de El Salvador* (M. L. Escamilla, ed.), Ministerio de Cultura y Comunicaciones, San Salvador, El Salvador, 256 pp.
- FELTEN, V. H. 1955. Fledermäuse (Mammalia, Chiroptera) aus El Salvador. Teil 1. Senckenbergiana Biol., 36:271-285.
- . 1956a. Fledermäuse (Mammalia, Chiroptera) aus El Salvador. Teil 2. Senckenbergiana Biol., 37:69-86.
- . 1956b. Fledermäuse (Mammalia, Chiroptera) aus El Salvador. Teil 3. Senckenbergiana Biol., 37:179-212.
- . 1956c. Fledermäuse (Mammalia, Chiroptera) aus El Salvador. Teil 4. Senckenbergiana Biol., 37:341-367.
- . 1957a. Fledermäuse (Mammalia, Chiroptera) aus El Salvador. Teil 5. Senckenbergiana Biol., 38:1-22.

- . 1957b. Nagetiere (Mammalia, Rodentia) aus El Salvador. Teil 1. Senckenbergiana Biol., 38:145-155.
- . 1958a. Nagetiere (Mammalia, Rodentia) aus El Salvador. Teil 2. Senckenbergiana Biol., 39:1-10.
- . 1958b. Nagetiere (Mammalia, Rodentia) aus El Salvador. Teil 3. Senckenbergiana Biol., 39:133-144.
- . 1958c. Weitere Säugetiere aus El Salvador (Mammalia: Marsupialia, Insectivora, Primates, Edentata, Lagomorpha, Carnivora und Artiodactyla). Senckenbergiana Biol., 39:213-228.
- GARDNER, A. L. 1973. The systematics of the genus *Didelphis* (Marsupialia: Didelphidae) in North and Middle America. Spec. Publ. Mus., Texas Tech Univ., 4:1-81.
- GENOWAYS, H. H. 1973. Systematics and evolutionary relationships of spiny pocket mice, genus *Liomys*. Spec. Publ. Mus., Texas Tech Univ., 5:1-368.
- GOLDMAN, E. A. 1937. New rodents from Middle America. J. Washington Acad. Sci., 27:418-423.
- . 1950. Raccoons of North and Middle America. N. Amer. Fauna, 60:vi + 1-153.
- GOODWIN, G. G. 1959. Bats of the subgenus *Natalus*. Amer. Mus. Novit., 1977:1-22.
- GREENBAUM, I. F. 1981. Genetic interactions between hybridizing cytotypes of the tent-making bat (*Uroderma bilobatum*). Evolution, 35:306-321.
- GREENBAUM, I. F., AND J. K. JONES, JR. 1978. Noteworthy records of bats from El Salvador, Honduras, and Nicaragua. Occas. Papers Mus., Texas Tech Univ., 55:1-7.
- GUZMAN, D. J. 1883. Apuntamientos sobre la topografía física de la República de El Salvador. Tipografía de El Cometa, San Salvador, 525 pp.
- HALL, E. R. 1951. American weasels. Univ. Kansas Publ., Mus. Nat. Hist., 4:1-466.
- . 1981. The mammals of North America. John Wiley and Sons, New York, 1:xv + 1-600 + 90 and 2:vi + 601-1181 + 90.
- HARRIS, W. P., JR. 1937. Revision of *Sciurus variegatoides* a species of Central American squirrel. Misc. Publ. Mus. Zool., Univ. Michigan, 38:1-39.
- HARRISON, D. L., AND N. PENDLETON. 1975. A second record of Wied's long-legged bat (*Macrophyllum macrophyllum* Schinz, 1821, Chiroptera: Phyllostomatidae) in El Salvador, with notes on the palate, reproduction and diet of the species. Mammalia, 38:689-693.
- HELLEBUYCK, V., J. R. TAMSITT, AND J. G. HARTMAN. 1985. Records of bats new to El Salvador. J. Mamm., 66:783-788.
- HERSHKOVITZ, P. 1954. Mammals of northern Colombia, preliminary report No. 7: tapirs (genus *Tapirus*), with a systematic review of American species. Proc. U. S. Nat. Mus., 103:465-496.
- . 1958. The metatarsal glands in white-tailed deer and related forms of the Neotropical region. Mammalia, 22:537-546.
- HOLDRIDGE, L. R. 1975. Mapa ecológico de El Salvador memoria explicativa. Ministerio de Agricultura y Ganadería, San Salvador, El Salvador, 98 pp.
- HOOPER, E. T. 1949. A new subspecies of harvest mouse (*Reithrodontomys*) from Central America. Proc. Biol. Soc. Washington, 62:169-171.
- . 1952. A systematic review of the harvest mice (genus *Reithrodontomys*) of Latin America. Misc. Publ. Mus. Zool., Univ. Michigan, 77:1-255.
- . 1957. Dental patterns in mice of the genus *Peromyscus*. Misc. Publ. Mus. Zool., Univ. Michigan, 99:1-59.
- . 1958. The male phallus in mice of the genus *Peromyscus*. Misc. Publ. Mus. Zool., Univ. Michigan, 105:1-24, 14 pls.



- . 1960. The glans penis in *Neotoma* (Rodentia) and allied genera. Occas. Papers Mus. Zool., Univ. Michigan, 618:1-21, 11 pls.
- . 1968. Habitats and food of amphibious mice of the genus *Rheomys*. J. Mamm., 49:550-553.
- . 1972. A synopsis of the rodent genus *Scotinomys*. Occas. Papers Mus. Zool., Univ. Michigan, 665:1-32.
- HUCKABY, D. G. 1980. Species limits in the *Peromyscus mexicanus* group (Mammalia: Rodentia: Muridae). Contrib. Sci., Nat. Hist. Mus. Los Angeles Co., 326:1-24.
- JONES, J. K., JR., AND W. J. BLEIER. 1974. Sanborn's long-tongued bat, *Leptonycteris sanborni*, in El Salvador. Mammalia, 38:144-145.
- JONES, J. K., JR., J. ARROYO-CABRALES, AND R. D. OWEN. 1988. Revised checklist of bats (Chiroptera) of Mexico and Central America. Occas. Papers Mus., Texas Tech Univ., 120:1-34.
- KELLOGG, R., AND E. A. GOLDMAN. 1944. Review of the spider monkeys. Proc. U. S. Nat. Mus., 96(3186):1-45.
- KOOPMAN, K. F. 1976. Catalog of type specimens of Recent mammals in the Academy of Natural Sciences at Philadelphia. Proc. Acad. Nat. Sci. Philadelphia, 128:1-24.
- KORTLUCKE, S. M. 1973. Morphological variation in the kinkajou, *Potos flavus* (Mammalia: Procyonidae), in Middle America. Occas. Papers Mus. Nat. Hist., Univ. Kansas, 17:1-36.
- LAVALL, R. K. 1969. Records of bats from Honduras and El Salvador. J. Mamm., 50:819-822.
- . 1973a. A revision of the Neotropical bats of the genus *Myotis*. Sci. Bull., Nat. Hist. Mus. Los Angeles Co., 15:1-54.
- . 1973b. Systematics of the genus *Rhogeessa* (Chiroptera: Vespertilionidae). Occas. Papers Mus. Nat. Hist., Univ. Kansas, 19:1-47.
- LAWLOR, T. E. 1969. A systematic study of the rodent genus *Otolyomys*. J. Mamm., 50:28-42.
- LESSON, M. P.-R. 1842. Nouveau tableau du règne animal. Mammifères. A Bertrand, Paris, 204 pp.
- MCBEE, K., R. J. BAKER, AND S. L. PIMM. 1985. Utility of morphological distance measures and clustering algorithms: a test using phyllostomid bats. Ann. Carnegie Mus., 54:393-412.
- MENDEZ, E. 1984. Mexico and Central America. Pp. 513-524, in White-tailed deer: ecology and management (L. K. Halls, ed.), Wildlife Manag. Inst., Washington, D. C., xxiii+870 pp.
- MILLER, G. S., JR., AND G. M. ALLEN. 1928. The American bats of the genera *Myotis* and *Pizonyx*. Bull. U. S. Nat. Mus., 144:viii + 1-218.
- MUSSER, G. G. 1969. Notes on *Peromyscus* (Muridae) of Mexico and Central America. Amer. Mus. Novit., 2357:1-23.
- NELSON, E. W. 1899. Revision of the squirrels of Mexico and Central America. Proc. Washington Acad. Sci., 1:15-110.
- . 1932. Remarks on coyotes, with description of a new subspecies from Salvador. Proc. Biol. Soc. Washington, 45:223-225.
- NELSON, E. W., AND E. A. GOLDMAN. 1931. Three new raccoons from Mexico and Salvador. Proc. Biol. Soc. Washington, 44:17-22.
- . 1933. Revision of the jaguars. J. Mamm., 14:221-240.
- Ogilby, W. 1839. On a new species of squirrel (*Sciurus variegatoides*) from the west coast of South America. Proc. Zool. Soc. London, 7:117.
- ONDRIAS, J. C. 1960. Variation of the zygomatic breadth in *Peromyscus mexicanus* and *Peromyscus boylii* from El Salvador. Mammalia, 24:218-221.

- OWEN, J. G., R. J. BAKER, AND J. K. JONES, JR. 1990. First record of *Peromyscus gymnotis* (Muridae) from El Salvador, with second records for *Choeroniscus godmani* and *Diaemus youngi* (Phyllostomidae). *Texas J. Sci.*, 42:417-418.
- OWEN, R. D. 1987. Phylogenetic analysis of the bat subfamily Stenodermatinae (Mammalia: Chiroptera). *Spec. Publ. Mus., Texas Tech Univ.*, 26:1-65.
- PACKARD, R. L. 1960. Speciation and evolution of the pygmy mice, genus *Baiomys*. *Univ. Kansas Publ., Mus. Nat. Hist.*, 9:579-670.
- PARADISO, J. L. 1967. A review of the wrinkle-faced bats (*Centurio senex* Gray), with description of a new subspecies. *Mammalia*, 31:595-604, pl. 15.
- PINE, R. H. 1972. The bats of the genus *Carollia*. *Tech. Monogr., Texas Agric. Exp. Sta.*, 8:1-125.
- ROBERTSON, P. B., AND G. G. MUSSER. 1976. A new species of *Peromyscus* (Rodentia: Cricetidae), and a new specimen of *P. simulatus* from southern Mexico, with comments on their ecology. *Occas. Papers Mus. Nat. Hist., Univ. Kansas*, 47:1-8.
- ROGERS, D. S., AND D. J. SCHMIDLY. 1982. Systematics of spiny pocket mice (genus *Heteromys*) of the *desmarestianus* species group from Mexico and northern Central America. *J. Mamm.*, 63:375-386.
- SANBORN, C. C. 1933. Bats of the genera *Anoura* and *Lonchoglossa*. *Field Mus. Nat. Hist., Zool. Ser.*, 20:23-28.
- . 1937. American bats of the subfamily Emballonurinae. *Field Mus. Nat. Hist., Zool. Ser.*, 20:321-354.
- SMITH, J. D. 1972. Systematics of the chiropteran family Mormoopidae. *Misc. Publ. Mus. Nat. Hist., Univ. Kansas*, 56:1-132.
- STIRTON, R. A. 1944. Tropical mammal trapping I: the water mouse *Rheomys*. *J. Mamm.*, 25:337-343.
- SWANEPOEL, P., AND H. H. GENOWAYS. 1979. Morphometrics. Pp. 13-106, in *Biology of bats of the New World family Phyllostomatidae. Part III* (R. J. Baker, J. K. Jones, Jr., and D. C. Carter, eds.), *Spec. Publ. Mus., Texas Tech Univ.*, 16:1-441.
- TOSI, J., JR., AND G. HARTSHORN. 1978. Mapa ecológico de El Salvador sistema de zonas de vida del Dr. L. R. Holdridge. Ministerio de Agricultura y Ganadería de El Salvador y Centro Agronómico Tropical de Investigación y Enseñanza.
- VAN GELDER, R. G. 1959. A taxonomic revision of the spotted skunks (genus *Spilogale*). *Bull. Amer. Mus. Nat. Hist.*, 117:229-392.
- WARNER, J. W., J. L. PATTON, A. L. GARDNER, AND R. J. BAKER. 1974. Karyotypic analysis of twenty-one species of molossid bats (Molossidae: Chiroptera). *Canadian J. Genet. Cytol.*, 16:165-176.
- WEBB, S. D., AND S. C. PERRIGO. 1984. Late Cenozoic vertebrates from Honduras and El Salvador. *J. Vert. Paleo.*, 4:237-254.
- WOODBURNE, M. O. 1968. The cranial myology and osteology of *Dicotyles tajacu*, the collared peccary, and its bearing on classification. *Mem. So. California Acad. Sci.*, 7:1-48.
- WRIGHT, D. B. 1989. Phylogenetic relationships of *Catagonus wagneri*: sister taxa from the Tertiary of North America. Pp. 281-308, in *Advances in Neotropical mammalogy* (K. H. Redford and J. F. Eisenberg, eds.), Sandhill Crane Press, Gainesville, Florida, ix + 614 pp.

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